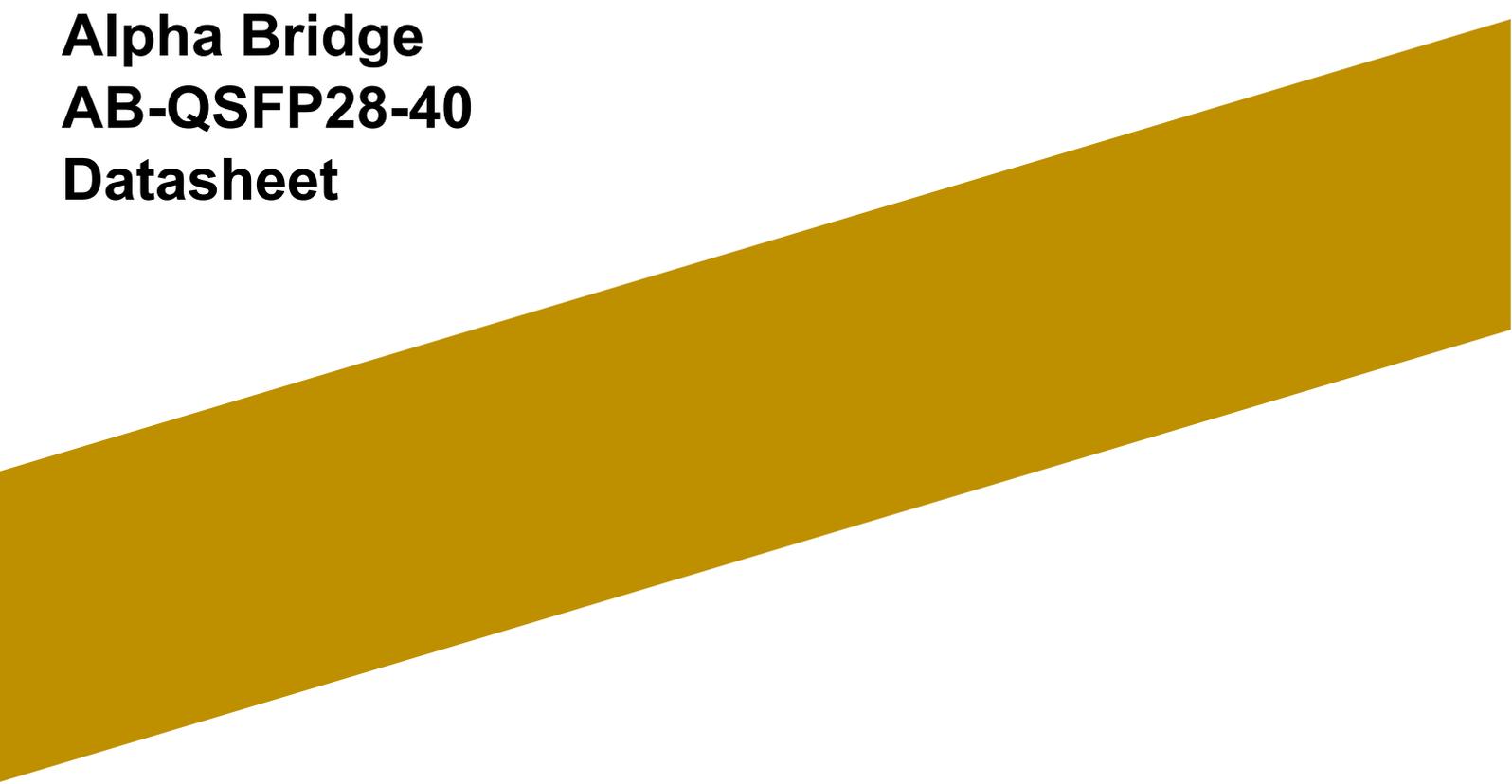


**Alpha Bridge
AB-QSFP28-40
Datasheet**



Features

- Hot Pluggable QSFP28 form factor
- Supports aggregate bit rate up to 103.125Gb/s LC Duplex optical interface
- 4x25Gb/s LAN-WDM transmitter, EML laser, APD array detector
- Operating case temperature: 0 to 70 °C
- Low power consumption <4.5W
- Applicable for 40km SMF connection without FEC
- All-metal housing for superior EMI performance
- IIC management interface
- Single +3.3V power supply RoHS compliant (lead free)

Applications

- 100G Ethernet
- Other optical links

Standards

- SFF8436, SFF-8636
- SFF-8665, SFF8661
- IEEE 802.3ba

Description

The 40km 100GBase-LR4 QSFP28 transceiver is designed to meet the requirements of 100G ethernet links over SMF up to 40km. It is compliant with QSFP28 MSA, IEEE 802.3ba. It is cost-effective, low power consumption with a single 3.3V power supply. The module has an aggregate bit rate up to 103.125Gbps by multiplexing of 4 independent LAN-WDM optical lanes, each lane capable of transmitting 25.78125Gb/s over 40km SMF.

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ.	Max	Unit
Power Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature Range	Ts	-40		85	°C
Relative Humidity - Storage	RHS	0		95	%
Relative Humidity - Operating	RHO	0		85	%
Static electrical discharge (human body model)	-	500	-	-	V

Recommended Operating Conditions

Parameter	Symbol	Min	Typ.	Max	Unit
Case Operating Temperature Range	Tc	0	-	70	°C
Power Supply Voltage	Vcc	3.14	3.3	3.46	V
Total Power Consumption	P	-	-	4.5	W
Data Rate per lane	BR	-	25.78125	-	Gbps

Transmitter Electrical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit
Differential Input Voltage Swing	VIN	180	-	900	mV
Tx Differential Input Impedence	ZIN	-	100	-	Ω
Differential input return loss		Per 100Gbase-ER4			dB
Common mode input return loss		Per 100Gbase-ER4			dB

Receiver Electrical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit
Differential output Voltage Swing	VOUT	300	-	1200	mV
Rx Differential Output Impedence	ZOUT	-	100	-	Ω
Differential output return loss		Per 100Gbase-ER4			dB
Common mode output return loss		Per 100Gbase-ER4			dB

Optical Characteristics

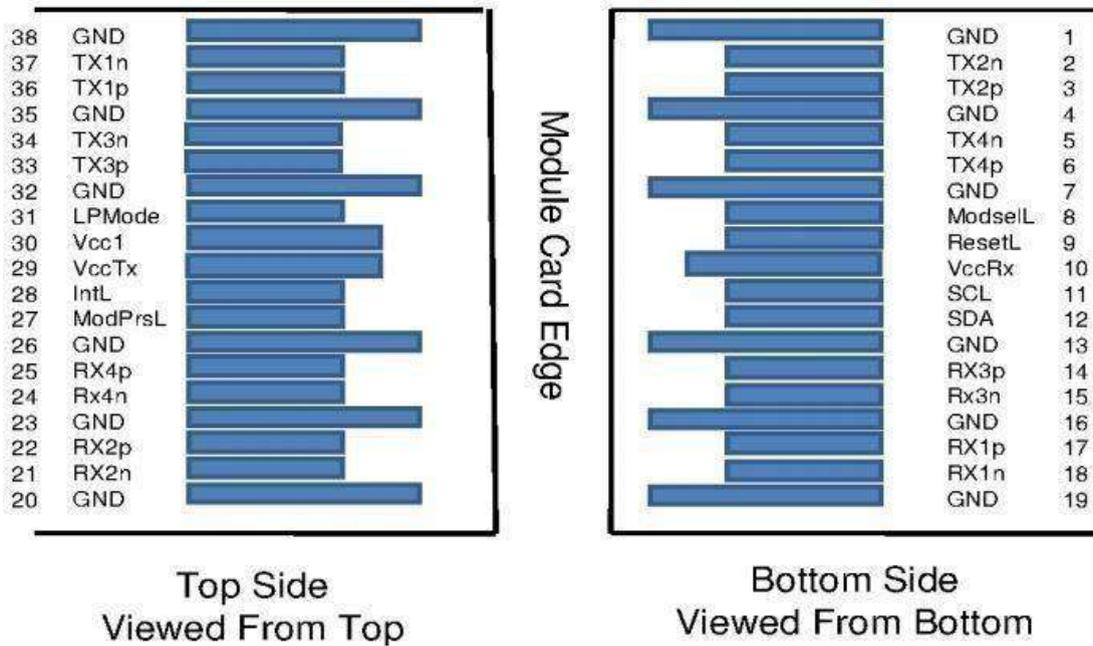
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter Characteristics						
Laser Type		EML				
Data Rate per lane	fDC	-	25.78125	-	Gb/s	
Aggregate Data Rate	fD	-	103.125	-	Gb/s	
Signal Speed Variation from Nominal	ΔfD	-100	-	100	ppm	
Lane Center Wavelength Range	λ	1294.53 - 1296.59				nm
		1299.02 - 1301.09				
		1303.54 - 1305.63				
		1308.09 - 1310.19				
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Total Average launch Power	PTOTAL	-	-	8.9	dBm	
Average Launch Power, each lane	POUT	-	2	-	dBm	
Optical Modulation Amplitude (OMA), each lane	POMA	0.1		4.5	dBm	
Launch Power in OMA minus TDP, each lane		-2.3	-	-	dBm	
Average Launch Power of OFF transmitter, each lane	POFF	-	-	-30	dBm	
Extinction Ratio	ER	8	-	-	dB	
Transmit Reflectance	RFL		-	-	-12	dB
Eye Diagram	Complies with 100Gbase-LR4 eye masks when filtered					
Receiver Characteristics						
Receiver Type		APD				
Data Rate per lane		-	25.78125	-	Gb/s	

		1294.53 - 1296.59				
Operating Central Wavelength	λ	1299.02 - 1301.09			nm	
		1303.54 - 1305.63				
		1308.09 - 1310.19				
Damage Threshold		5.5	-	-	dBm	
Receiver Sensitivity, each lane	SenOMA	-	-19	-	dBm	1
Average Receive Power, each lane		-	-	4.5	dBm	
Receiver Power, each lane (OMA)		-	-	4.5	dBm	
Receiver Reflectance	RFL	-	-	-26	dB	
LOS Assert	LOSA	-30	-	-	dBm	
LOS De-Assert	LOSD	-	-	-25	dBm	
LOS Hysteresis	LOSH	0.5	3	5	dB	

Note:

1. BER=10-12

Pin Layout



Pin Definitions

Pin	Symbol	Name/Description	Notes
1	GND	Ground	
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non -Inverted Data Input	
7	GND	Ground	
8	ModselL	Module Select (Low active, pull-up in module)	
9	RetsetL	Module Reset (Pull-up in module)	
10	VCC Rx	+3.3V Power Supply Receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	

13	GND	Ground	
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	
20	GND	Ground	
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VCC Tx	+3.3V Power Supply transmitter	
30	VCC1	+3.3V Power Supply	
31	LPMODE	Low Power Mode	
32	GND	Ground	
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	

Ordering Information

Part Number	Product Description
AB-QSFP28-40	100Gbps QSFP28 LAN WDM4, LC, 40km, 0°C~+70°C, with DDM

Note: All information contained in this document is subject to change without notice.

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